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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/502,211	12/22/2004	Frank Schou	10191/3635	9174

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EXAMINER

KAPLAN, HAL IRA

ART UNIT	PAPER NUMBER
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2836

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/502,211

Applicant(s)

SCHOU, FRANK

Examiner

Hal I. Kaplan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10 and 12-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10 and 12-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings were received on April 7, 2006. These drawings are accepted.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 10, 12, 14-16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the US patent of Sun et al. (6,243,277) in view of the US patent of Nagao et al. (5,986,354) and the article "No Space? No Problem for these Tiny, Inductorless, Efficient, Low Noise, 1.8V and 1.5V, Step-Down DC/DC Converters", Bill Walter, Linear Technology Magazine, December 2001 (Walter).

As to claim 10, Sun, drawn to a bi-directional DC to DC converter for energy storage applications, discloses, in Figure 3, a reserve energy accumulator (314) to which a charging voltage higher than the normal DC voltage is applied by a high-voltage

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electric system during regular operation (see column 2, lines 13-16 and column 3, lines 16-18) and wherein the reserve energy accumulator (314), in the event of a fault in the normal DC voltage (306), delivers a reserve voltage with which operation of at least one of the electronic circuits (300) can be maintained for a period of time (see column 3, lines 34-41); and a step-down regulator (308) that steps down an input direct voltage applied thereto to the normal DC voltage (306) (see column 3, lines 43-46; since the regulator 308 converts the supplied voltage to the level required for the load, if the level required for the load is lower than the supplied voltage, the regulator will act as a step-down regulator), wherein in normal operation the normal DC voltage (306) is applied directly by the high-voltage electric system as the charging voltage to the reserve energy accumulator (314) and is also applied as an input direct voltage to the step-down regulator (308), and wherein the reserve voltage supplied by the reserve energy accumulator (314) is applied directly as input direct voltage to the step-down regulator (308) in the event of a fault in the normal DC voltage (see column 3, lines 32-42). Sun does not disclose the normal DC voltage being applied via a diode, or the step-down regulator not including an inductor.

Nagao, drawn to a DC source system with solar cell, and its operation method, discloses, in Figure 1, a DC voltage applied from a DC source (3) directly via a diode (8) to a reserve storage energy accumulator (6) and as an input direct voltage to the load (2). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply the normal DC voltage of Sun via a diode in order to prevent reverse current flow into the main DC supply.

Walter discloses a step-down DC/DC converter (LTC1911) that does not include an inductor. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to use an inductorless step-down DC/DC converter in the system of Sun in view of Nagao, in order to increase efficiency, reduce noise, and protect against short circuit and over temperature conditions.

As to claims 12 and 16, Sun discloses an upstream step-down regulator to which is applied the reserve voltage, the upstream step-down regulator deriving from the reserve voltage the input direct voltage for the step-down regulator (see column 2, lines 13-16 and column 3, lines 18-19 and 32-42; if the reserve voltage is much higher than the input voltage, and the upstream regulator outputs the input voltage, then the upstream regulator is acting as a step-down regulator).

As to claims 14 and 15, Sun discloses a plurality of step-down regulators (308,310,312) (see column 3, lines 10-13 and Figure 3).

As to claim 18, the reserve energy accumulator of Sun includes a capacitor (see Figure 3).

5. Claims 13 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun in view of Nagao and Walter, and further in view of the British patent of Lieu (GB 2,246,648).

As to claims 13 and 17, Sun in view of Nagao and Walter disclose all of the claimed features, as set forth above, except for the upstream step-down regulator including a switching regulator. The step-down regulators of Sun are linear regulators (see column 3, lines 50 and 62-64, and Figure 4).

Lieu, drawn to a regulated step-down switching circuit for the DC converter of a power supply, discloses, in Figure 2, a switching regulator for a step-down converter (see page 1, lines 1-3). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to use the switching regulator of Lieu in the upstream step-down regulator of Sun in view of Nagao and Walter, because it has a simple structure and is more reliable and efficient in operation.

Response to Arguments

6. Applicant's arguments with respect to the rejections of claims 10 and 12-18 under 35 U.S.C. 103(a) have been considered but are moot in view of the new ground(s) of rejection.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hal I. Kaplan whose telephone number is 571-272-8587. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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